

To: Paul Davis[p_davis@envirologicinc.com]
From: Griswold, Hays
Sent: Sat 8/8/2015 3:48:37 PM
Subject: Re: ANOTHER analysis of the amount of water released into the Animas

Thank you again...very helpful
Hays

Sent from my iPhone

On Aug 8, 2015, at 9:36 AM, Paul Davis <p_davis@envirologicinc.com> wrote:

you are welcome.

I forgot to attached the spreadsheet for the estimate for the USGS Cement Creek station (see attached). Both estimates are very close. However, the Cement Creek analysis has two benefits — 1) it is closer to the spill and 2) the base flow was constant before and after the spill went through. Therefore it was easier to calculate and would be easier to explain.

Please don't hesitate to ask if there is anything I can do to help

Sincerely,

Paul Davis

ps - if my numbers are confirmed and you need to publicly revise your original estimate I have no problem stating for the record that your estimate was reasonable and appropriate for the time you published it.

<Analysis of spill into Cement Creek Silverton 5August2015.xlsx>

On Aug 7, 2015, at 11:13 PM, Griswold, Hays <Griswold.Hays@epa.gov> wrote:

Thank you very much for the timely information we will check other sources our estimate was based on the estimated volume of the adit evacuated by the water.

Thanks again

Hays

Sent from my iPad

On Aug 7, 2015, at 3:28 PM, Paul Davis <p_davis@envirologicinc.com> wrote:

Dear Mr. Griswold,
I just performed a similar analysis for the USGS gaging station on Cement Creek.

I get just over 3 million gallons.

Now it is possible I have a systematic error so these estimates need to be independently reviewed

hope this helps,

IF you want or need to talk to me I will be traveling to Farmington, New Mexico this afternoon but you can call me at 505-688-6053

Sincerely,

Paul Davis

Begin forwarded message:

From: Paul Davis <p_davis@envirologicinc.com>
Subject: analysis of the amount of water released into the Animas
Date: August 7, 2015 at 12:34:21 PM MDT
To: griswold.hays@epa.gov

Dear Mr. Griswold,
We spoke briefly in the Durango Coffee Shop this morning. I am a hydrologist (mainly groundwater) and, using the USGS gaging station at Silverton, estimated the quantity of Wednesday's release.

Here is the hydrograph from the days before, during and after the spill.
(<http://waterdata.usgs.gov/nwis/uv?09359020>)

<PastedGraphic-1.tiff>

The spill clearly shows up on August 5th.

I took the period of record from late on the 4th to the evening of the 5th and estimated the trend of the base flow (flow that would have occurred without the spill. I then subtracted that estimated base flow from the flow during the spill. Next integrated (added up) the flow under the remaining curve (which

is just a curve of the spill minus base flow.

I get about 420,000 cubic feet (the number I mistakenly told you this morning as gallons) or about 3,160,000 gallons. See the attached spreadsheet.

A WORD OF CAUTION — this analysis was done in a hurry and must be checked by someone else.

Also - a cross check of the analysis could be performed by analyzing USGS gaging station records from their station on the Animas at Durango.

I have time later today if you want to meet and discuss this analysis.

I do hope it is useful to you.

Sincerely,

**Paul Davis
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<Analysis of spill into the Animas_5August2014.xlsx>

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